



RTI Performance Testing

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RTI Performance Testing

- **Perform application independent scalability tests with RTI 1.3v3 distribution using modified benchmark programs**
- **Define and perform application specific RTI performance tests for selected representative applications**

Basic Application Independent Scalability Tests with RTI 1.3 V3

Overall Goal:

- **Calculate and understand performance along these key axis**
 - **Number of federates**
 - **Number of objects / federate**
 - **Attributes characteristics**
 - **Number / object**
 - **Size**
 - **Number published and subscribed to**
 - **Attribute depth in class**
 - **Transport type (bundling and no bundling)**
 - **Time advance requests**
 - **DDM operations**

Initial Test: Baseline Scalability

- **Use 2 throughput benchmark federates**
- **1 federate sending, 1 receiving**
- **Only publish and subscribe to necessary attributes**
- **Flat class hierarchy**
- **Baseline tests:**
 - 1. Increase number objects/federate**
 - **1 100 byte attribute / object**
 - 2. Increase attribute size starting with 4 byte attribute**
 - **1 object / federate with 1 attribute / object**
- **Record throughput as updateAttributeValue calls / sec and number of Reflections / sec**

Initial Test: Baseline Federation Scalability

- **Use 16 Intel Solaris Platforms (N1-N16)**
- **Run throughput and time advance benchmarks**
- **N federates sending, N receiving**
- **1 object / federate**
- **1 200 byte attribute / object updated**
- **Flat hierarchy**
- **Best effort and reliable**
- **Baseline tests:**
 1. **N1 through N16**

Scalability Test

- **Evaluate baseline results and determine next tests**
- **Depending on results, select:**
 - 4 object / federate values
 - 4 attribute sizes
 - 4 number of attributes / object
 - 4 flat class hierarchy sizes
 - 4 class hierarchy depths
 - best effort and reliable
- **Repeat N2, N4, N8, and N16 for each selected**

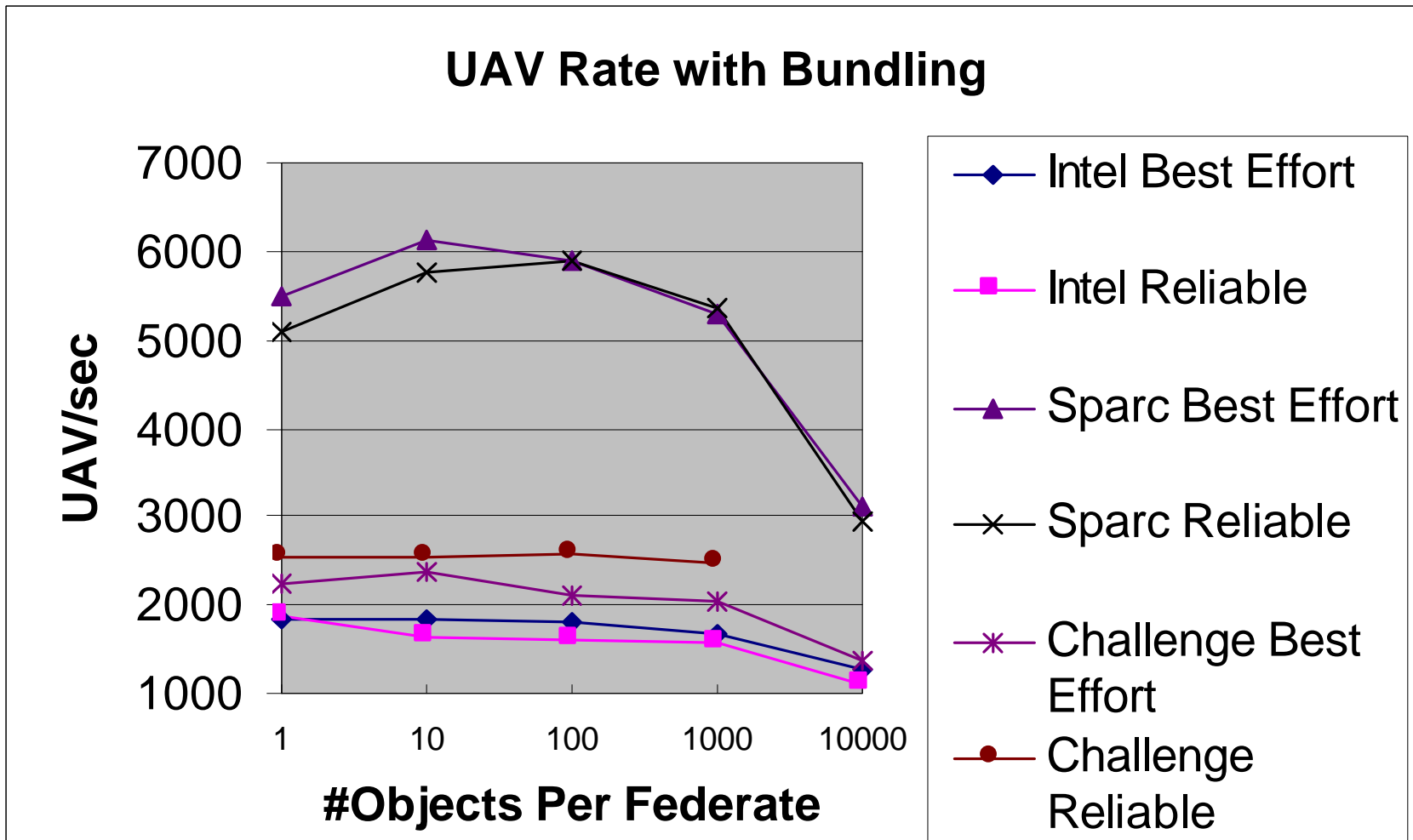
Application Specific RTI Performance Testing

- Define performance needs of DoD user communities and profile RTI 1.3 with respect to the needs
 - FEPWs define typical range of federation execution
 - RDE Forum use cases
 - Define performance needs in terms of benchmarks

Tests included for Fall SIW

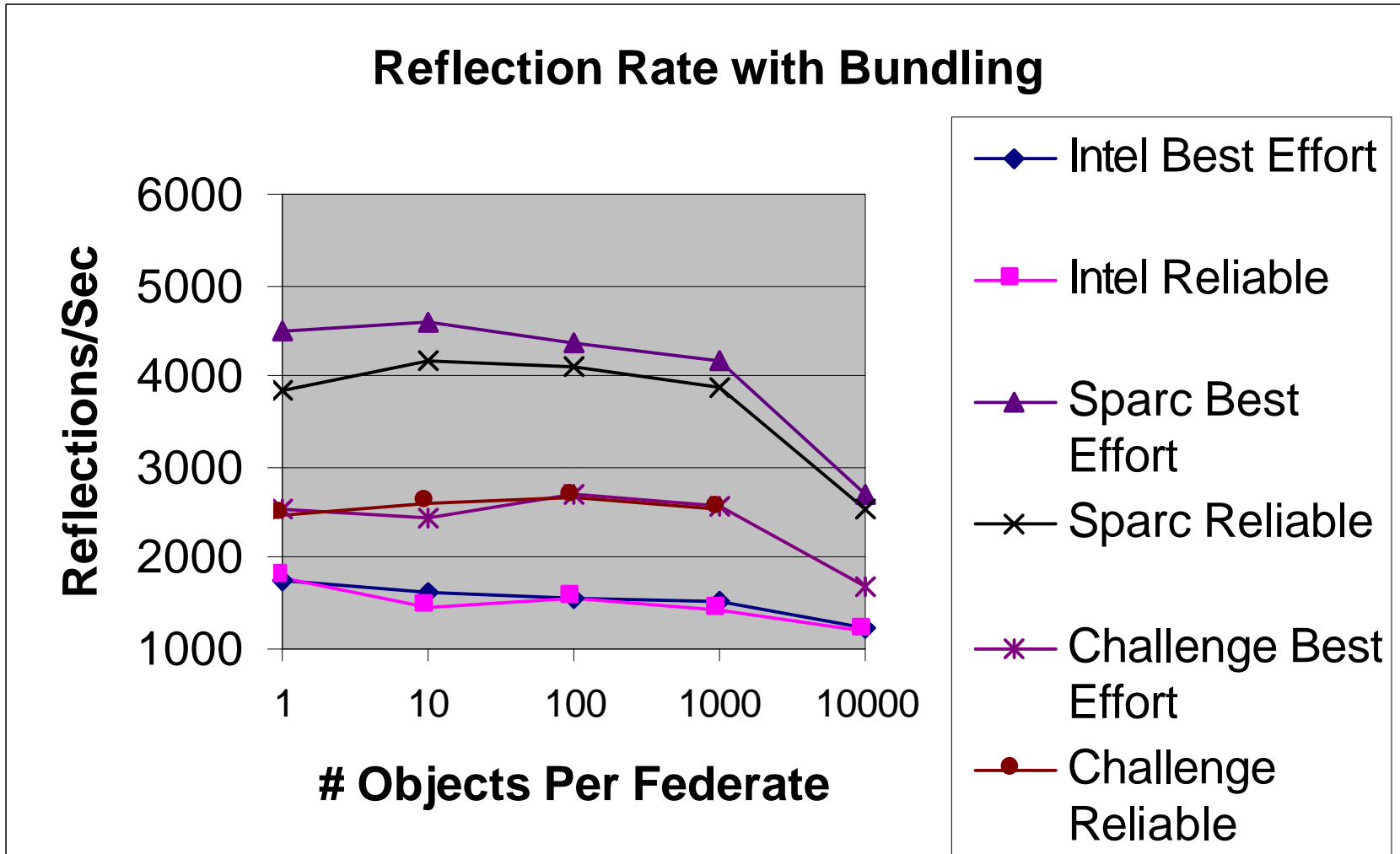
- **Baseline Scalability**
- **Baseline Federation Scalability**

Baseline Scalability Results



Flat Class Hierarchy 2 benchmark federates (1 sending, 1 receiving)
One 100 byte attribute/object

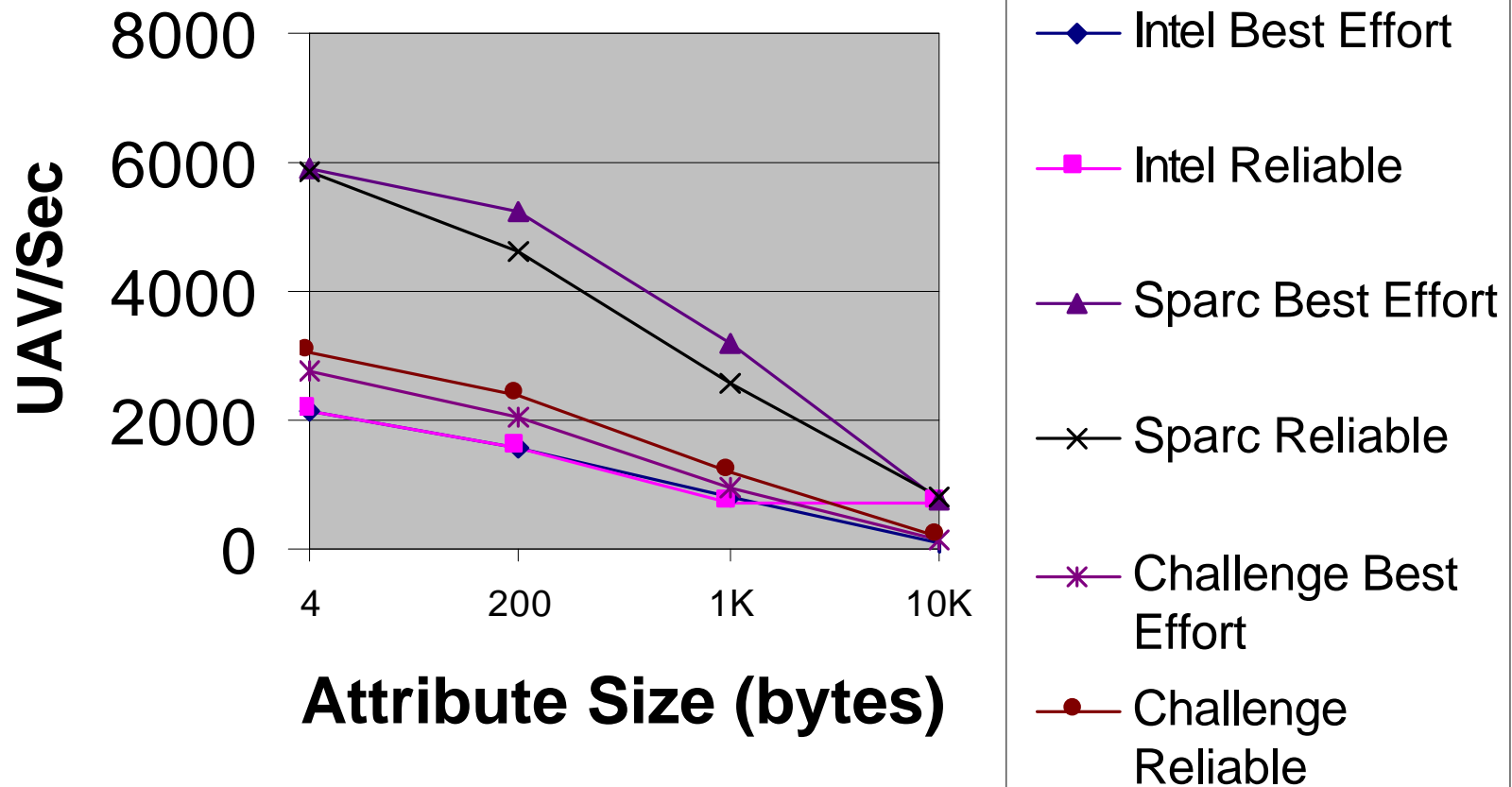
Baseline Scalability Results



Flat Class Hierarchy 2 benchmark federates (1 receiving , 1 sending)
One 100 byte attribute/object

Baseline Scalability Results

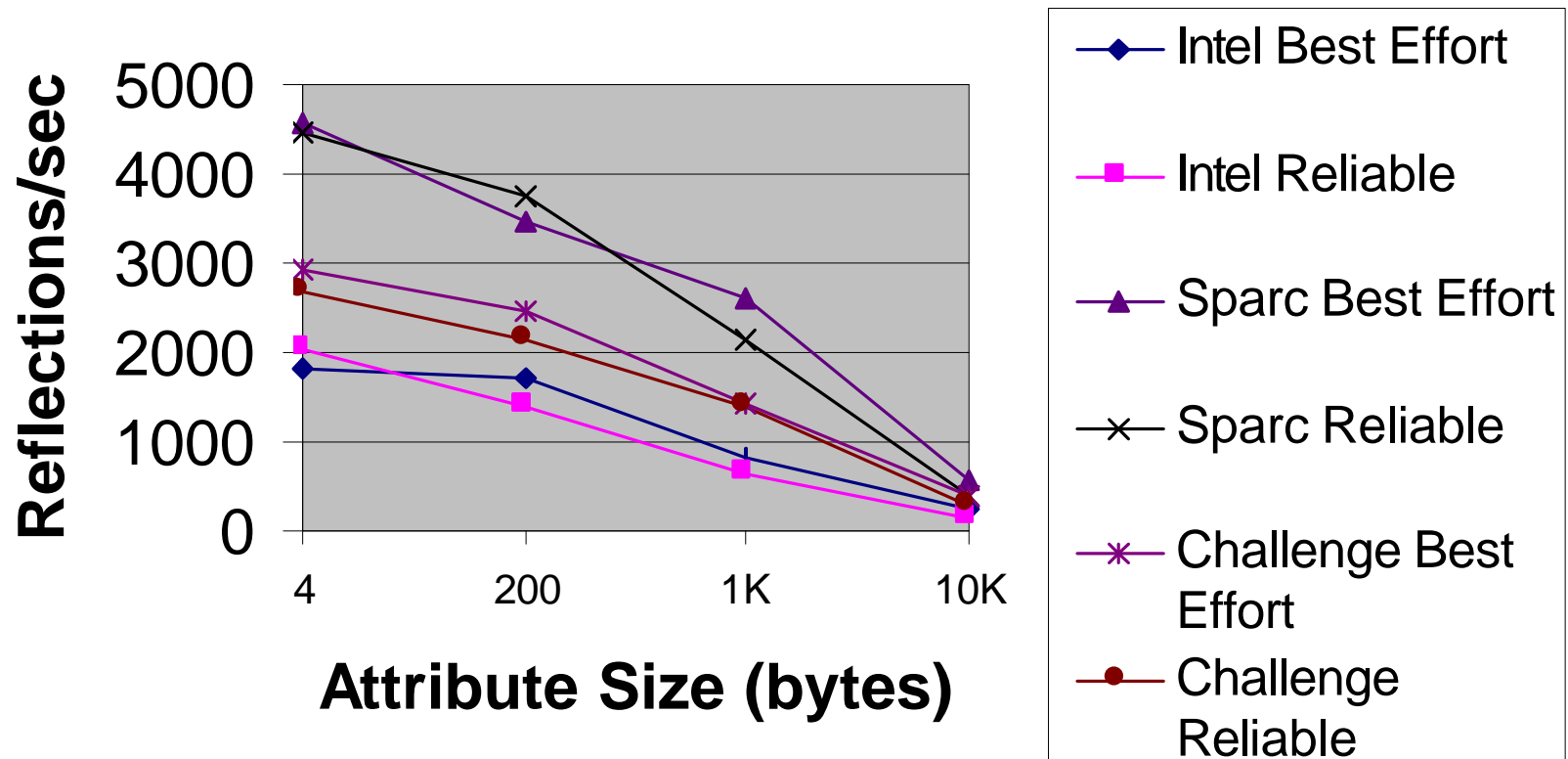
UAV Rate with Bundling



Flat Class Hierarchy 2 benchmark federates (1 sending, 1 receiving)
1 object/federate with 1 attribute/object

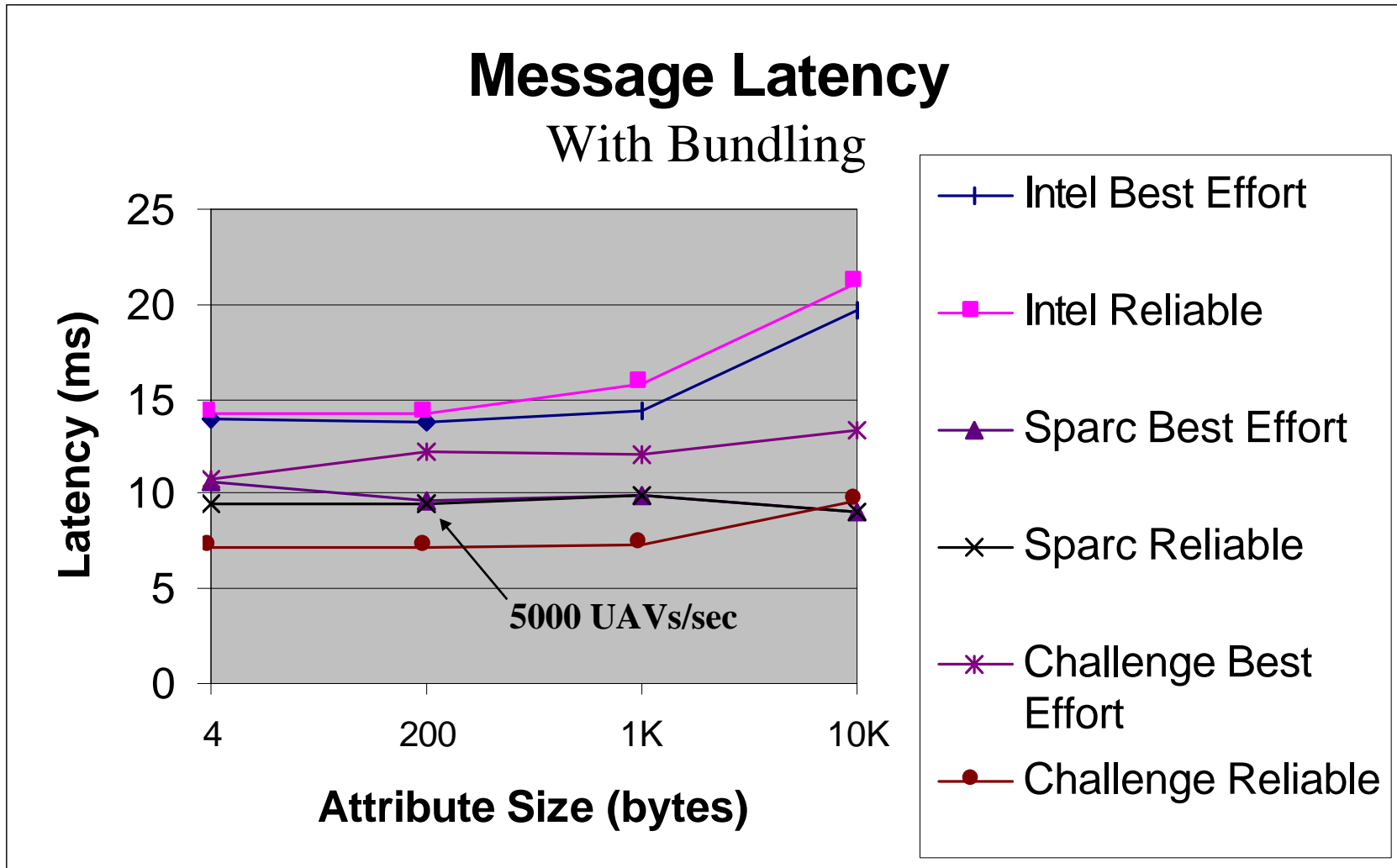
Baseline Scalability Results

Reflection Rate with Bundling



Flat Class Hierarchy 2 benchmark federates (1 receiving , 1 sending)
1 object/federate with 1 attribute/object

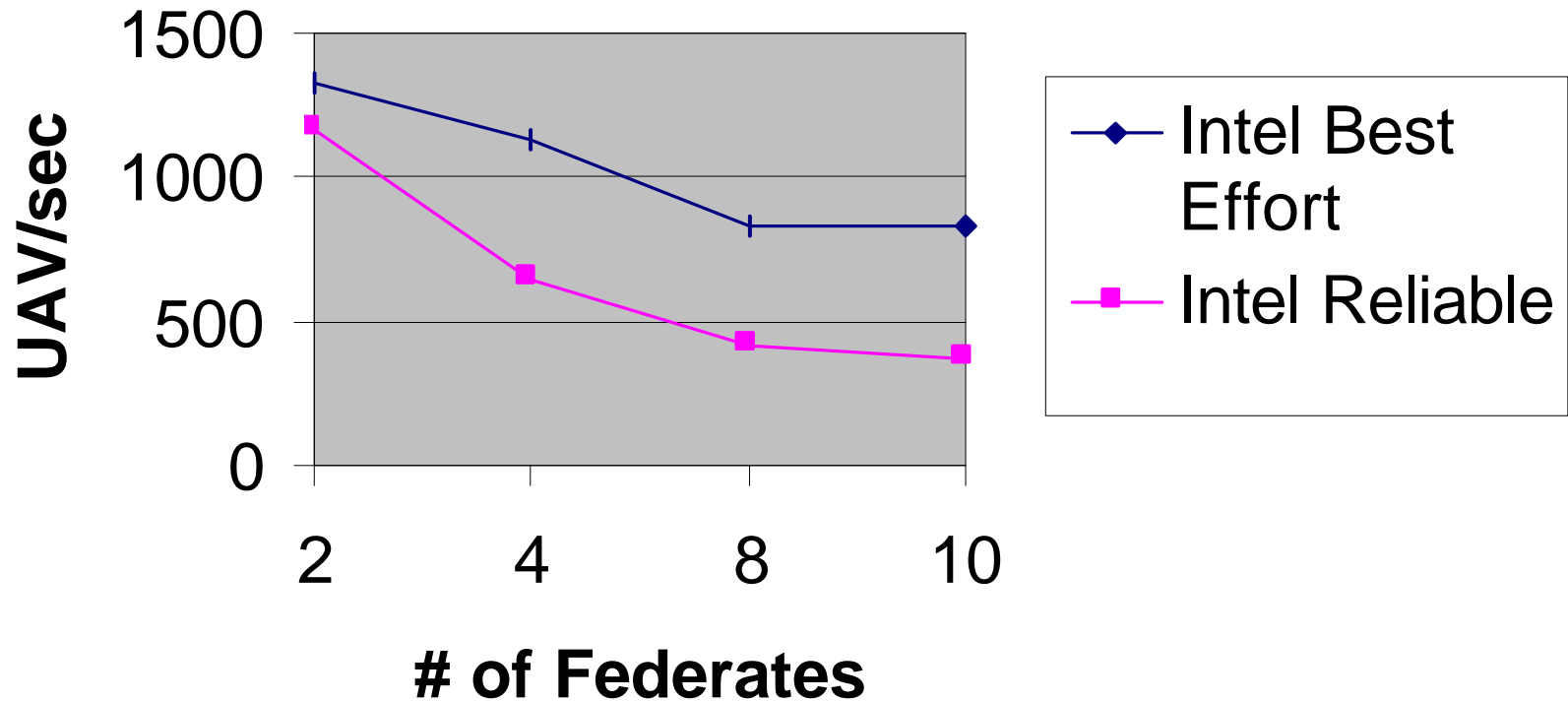
Baseline Scalability Results



Flat Class Hierarchy 2 benchmark federates (1 receiving , 1 sending)
1 object/federate with 1 attribute/object

Baseline Federation Scalability Results

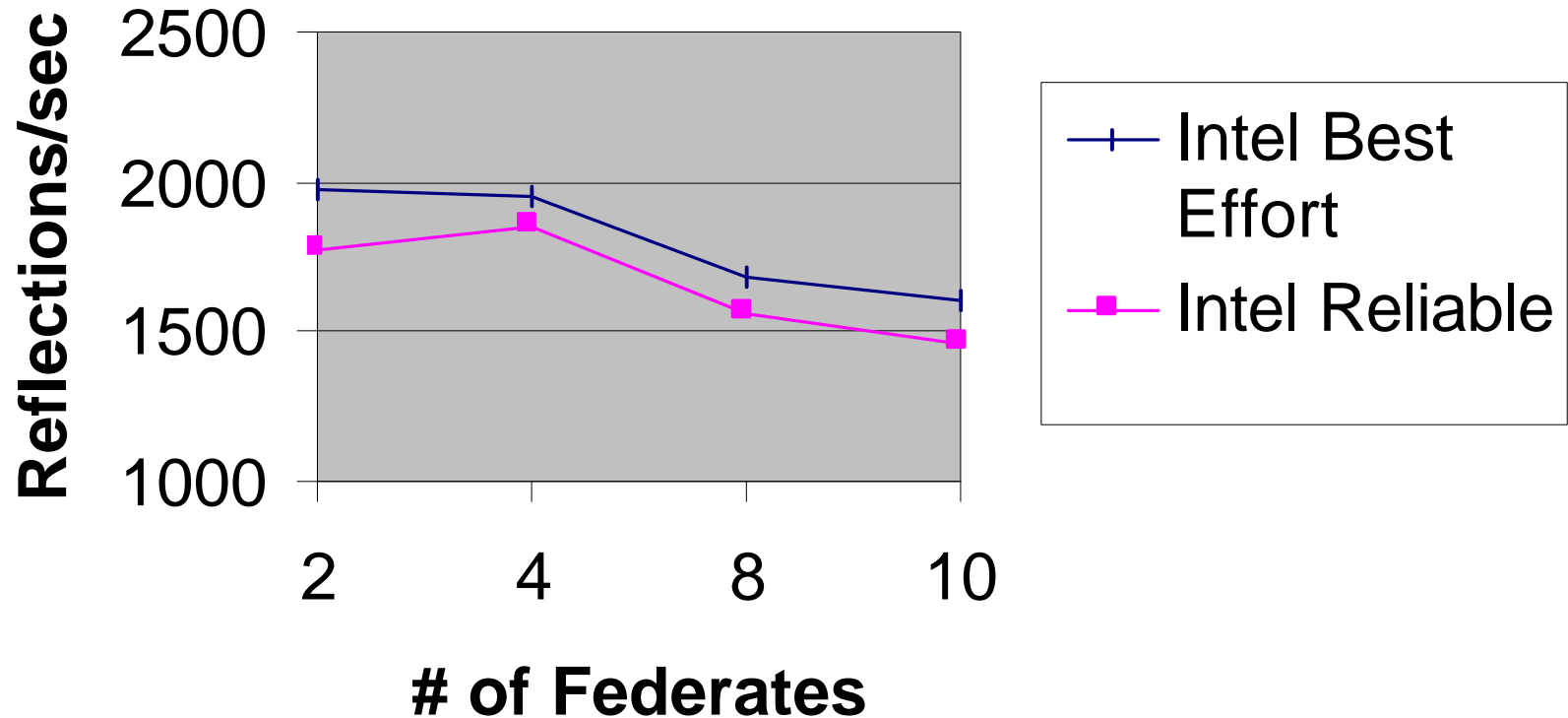
UAV Rate with Bundling



1 object with one 200 byte attribute
Each Federate publishes and subscribes

Baseline Federation Scalability Results

Reflection Rate with Bundling



1 object with one 200 byte attribute

Each Federate publishes and subscribes